

NATIONAL EAGLE AND WILDLIFE PROPERTY REPOSITORY

DRAFT ENVIRONMENTAL ASSESSMENT FOR Construction of a Crematorium

**US FISH & WILDLIFE SERVICE
OFFICE OF LAW ENFORCEMENT
Rocky Mountain Arsenal NWR
COMMERCE CITY, COLORADO**

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Property Repository
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Table of Contents	Page
Chapter 1. Introduction.....	4
1.1 Purpose.....	4
1.2 Need.....	4
1.3 Decisions that Need to be Made.....	5
Chapter 2. Description of Alternatives.....	5
2.1 Background.....	5
2.2 Alternative A (No Action).....	5
2.3 Alternative B (Proposed Action).....	6
2.4 Alternative C (Action).....	6
2.5 Alternatives Considered But Not Analyzed.....	6
2.5.1 Alternative D.....	6
2.5.2 Alternative E.....	7
2.5.3 Alternative F.....	7
Chapter 3. Affected Environment.....	7
3.1 Physical Environment.....	7
3.1.1 Climate and Air Quality.....	7
3.1.2 Geology and Soils.....	8
3.1.3 Water Resources.....	9
3.2 Biological Environment.....	10
3.2.1 Vegetation.....	10
3.2.2 Wildlife and Fisheries.....	12
3.2.3 Threatened and Endangered Species.....	15
3.2.4 Candidate Species.....	16
3.3 Cultural Resources.....	17
3.4 Recreation.....	17
3.5 Social and Economic Conditions.....	17
Chapter 4. Environmental Consequences.....	18
4.1 Alternative A (No Action).....	18
4.1.1 Climate and Air Quality.....	18
4.1.2 Geology and Soils.....	18
4.1.3 Water Resources.....	18
4.1.4 Biological Environment.....	18
4.1.5 Cultural Resources.....	18
4.1.6 Recreation.....	18
4.1.7 Social and Economic Conditions.....	18

4.1.8	Environmental Justice.....	18
4.2	Alternative B (Proposed Action).....	19
4.2.1	Climate and Air Quality.....	19
4.2.2	Geology and Soils.....	19
4.2.3	Water Resources.....	19
4.2.4	Biological Environment.....	19
4.2.5	Cultural Resources.....	20
4.2.6	Recreation.....	20
4.2.7	Social and Economic Conditions.....	20
4.2.8	Environmental Justice.....	20
4.3	Alternative C (Action).....	20
4.3.1	Climate and Air Quality.....	20
4.3.2	Geology and Soils.....	20
4.3.3	Water Resources.....	20
4.3.4	Biological Environment.....	21
4.3.5	Cultural Resources.....	21
4.3.6	Recreation.....	21
4.3.7	Social and Economic Conditions.....	21
4.3.8	Environmental Justice.....	21
4.4	Summary of Impacts by Alternative (Table).....	22
Chapter 5 List of Agencies, Organization and Persons Contacted.....		23
Appendices.....		24
Maps.....		24
Photographs.....		30
Crematorium Specifications.....		33

Chapter 1. Introduction

This Environmental Assessment (EA) has been prepared in compliance with NEPA for the proposed disposal of eagle carcasses, parts and feathers. The Rocky Mountain Arsenal National Wildlife Refuge (Refuge) located northeast of Denver, Colorado is the home to the National Eagle and Wildlife Property Repository (Repository.) The Repository is managed and operated by the US Fish & Wildlife Service (Service), Office of Law Enforcement, Washington, D.C. The objectives of the Repository are to provide Native Americans salvaged eagle resources for their utilization in cultural and religious practices and to provide central acquisition, accountability, storage, security and ultimately disposal of millions of forfeited/abandoned wildlife property for use in education. When bald and golden eagles are found dead, Service policies require all parties who find eagles ship the carcass and/or parts and feathers to the National Eagle Repository for assessment and distribution to enrolled Native Americans for use in various tribal ceremonies.

Following evaluation of each eagle carcass/part/feathers, all usable parts are retained for filling eagle feather requests. The Repository must then dispose of the organic waste. The Repository has faced disposal site tribulations since its relocation to Rocky Mountain Arsenal in 1995. Several burn sites such as Denver International Airport, Denver Zoological Park and currently Aurora Animal Shelter have all been temporary no cost services. Due to the influx of funding constraints the Aurora Animal Shelter, which is a publicly funded organization can no longer cremate at no cost. Therefore the Repository is evaluating a reasonable alternative to dispose of the waste.

Three alternatives for disposing of the eagle waste are analyzed including a no action alternative, the preferred alternative and one additional action.

1.1 Purpose

The purpose of this EA is to examine environmental impacts associated with the proposal to construct a facility at the Repository to provide for proper long-term disposal of decomposed and unusable eagle carcasses, parts and feathers. In addition, to develop a long term disposal solution.

1.2 Need

The Repository is required to support Federal law in the guard against illegal possession of federally protected species by maintaining required security levels along with minimizing expenditure of personnel and budget resources. Rising costs and concerns about human health and safety led to a determination that a more efficient solution for disposal was needed. In so doing, the Service has a need to comply with NEPA.

The Service determined that a long-term proper disposal solution is needed to replace the disposal system currently in place, in addition to the need to comply with NEPA. The Bald and Golden Eagle Act (16 USC 668a) strictly prohibits the possession and

transport of bald and golden eagles/parts and feathers without a permit. The rising black market of eagles/parts/feathers including Native American artifacts has provided grounds for increased concerns of security and proper disposal methods to preclude these items from falling into the black market.

In addition, the off site transportation of decomposed and bug infested carcasses and parts elevates the possibility of dispersing debris in route to an off site facility. On site disposal would positively alleviate these concerns.

1.3 Decisions that Need to be Made

The Chief, Law Enforcement, U.S. Fish and Wildlife Service (Service), Region 9, will select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether this Environmental Assessment (EA) is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether an Environmental Impact Statement (EIS) will need to be prepared.

Chapter 2. Description of Alternatives

2.1 Background

This Environmental Assessment evaluates alternatives for properly disposing of decomposed and unusable eagle carcasses, parts and feathers which cannot be utilized in the Service's Native American Eagle Feather Program. Based on input from internal scoping, one No-Action alternative and three Action alternatives have been identified. Also, two Action alternatives were considered but not analyzed.

No Action Alternative A-----Off-site cremation at no cost

Action Alternative B-----On-site cremation

Action Alternative C-----Off-site cremation at a cost

2.2 Alternative A (No Action): *Off-site cremation at no cost*

Currently, Repository staff transport by open bed truck unusable eagle refuse to the Aurora Animal Shelter crematorium, Aurora, Colorado which is located approximately 12 miles from the Refuge. During transportation, especially during high temperature days, the astringent odors of decomposition are emitted into the air potentially affecting the surrounding public. The Service is not charged for use of the facility at this time. However, this arrangement is not guaranteed in the future. Associated costs include vehicle use, fuel, mileage and personnel equaling \$85.00 per burn run. While Repository staff load the crematorium at Aurora Animal Shelter, security is not guaranteed as Repository staff is not present when the door is closed or when the burn begins.

2.3 Alternative B (Action): *On-site cremation (Preferred Alternative)*

The proposed crematory will be housed in a 16'x20'x18' high locked brick building located approximately 100 ft. NE of the existing Repository building. Transportation will be limited to a cart rolled directly from the Repository down the sidewalk to the crematory within 100 ft. alleviating mileage and travel time cost. The unit will be designed to meet Requirements/Standards of Colorado Regulation No. 6 for pathological waste, (human or animal remains consisting of carcasses, tissues, organs or body parts). All regulatory permits will be acquired from appropriate county and state governmental agencies, in addition to proper inspection(s). The crematory unit will measure approximately 9' x5'10"x10' high and consist of a 200 lbs/hr. batch load capacity. It will include one primary burn chamber operating at 1400 degree F and one secondary burn chamber with a one second, 1800 degree F residence time. The two chamber unit provides for the least amount of emissions at 0.5% which is well below the 10% allowed by regulation. Compared to single chamber units, the two chamber feature also provides for extremely low emissions in particulate matter and carbon monoxide. Initial cost includes \$34,000 for the unit and \$51,000 for construction. Operating costs include \$3.98 per hour of operation for fuel and electricity. Net operating cost would be \$16.00 @ \$0.04 per pound X 400 lbs. capacity per burn or \$32.00 per month. The on-site unit will provide the best scenario for required security as materials will be stored and processed in a secured building with limited access. In addition, the Arsenal is well fenced and guarded ensuring limited public access. Also, reducing the transportation distance from 30 miles to less than 100 ft. not only minimizes expenditure of personnel and budget resources but also risk to health and human safety. Sterile ash will be collected and stored in sealed trash cans and disposed of via trash service to an off-site sanitary landfill.

2.4 Alternative C (Action): *Off-site cremation at a cost*

Due to increased budget constraints, it is expected that Aurora Animal Shelter will soon implement charges to off set the cost of disposing additional materials. Survey of animal cremation services reveals costs ranging from \$10.00 to \$15.00 per bag. Each burn consisting of 30 bags equals \$450.00. In addition, vehicle fuel costs and personnel hourly rates increase the cost by \$85.00. Total monthly net cost per burn equals \$534.75. Prices may fluctuate over time. In addition, transportation costs, risks to security and health and human safety significantly surpass the installation and operating cost of on-site cremation.

2.5 Alternatives Considered But Not Analyzed

2.5.1 Alternative D : *On-site burial*

In 1942, the US Department of Army developed the Rocky Mountain Arsenal to produce chemical munitions for World War II. The area was then used for the production of pesticides beginning in 1947 and ending in 1982. The Arsenal is currently undergoing cleanup by the Department of Army and Shell Oil Company. This alternative would require excavating in an environmentally sensitive and restrictive area due to clean up

activities. This alternative is not feasible because it is not compatible with the Refuge objectives.

2.5.2 Alternative E: *Meat eating beetles*

The dermestid or carpet beetle feeds on dry-moist animal material (carrion). They do not eat anything else but carrion and will continue until the specimen is cleaned down to the bone. The Bald and Golden Eagle Protection Act strictly prohibits possession of eagles or any part thereof including eggs and nests. Therefore, this method would only address one step of disposal leaving a second step of disposing of eagle bones. In addition, they are a nonnative species to the area and would not be a reasonable or feasible alternative.

2.5.3 Alternative F: *Lye vats (acid wash)*

Lye, a highly caustic solution consisting of sodium hydroxide and potassium hydroxide flakes combined with water is used to bleach, soften, scour, and dissolve unwanted bits of adhering material. It is often used to remove flesh or fat from animal hides during tanning processes. This alternative involves hazardous material and possible threat to human health and safety including environmental impacts. This alternative would be deficient and not be reasonable due to the Arsenal CERCIA Site status.

Chapter 3. Affected Environment

3.1 Physical Environment

Location

The National Eagle and Wildlife Property Repository, Building #128 is currently located on the Rocky Mountain Arsenal National Wildlife Refuge which is a 27 square mile section located about 9 miles northeast of downtown Denver adjacent to Commerce City, CO. In 1942 this land was developed by the Department of the Army to produce chemical munitions for World War II and later used by Shell Oil Company for the production of pesticides. It is currently undergoing cleanup by the Army and Shell Oil Company. Building #128 is located just northeast of Building 111, the Arsenal Administrative Building. This area currently contains several structures including additional buildings, trailers and storage buildings which house refuge, Army, USGS, Project Management Corp. personnel, and cleanup subcontractors. The proposed eagle crematory will more specifically be located within 100 ft. northeast of building #128 and parallel to the Repository. **See attached map.**

3.1.1 Climate and Air Quality

AFFECTED ENVIRONMENT

Climate at the Refuge is considered semi-arid, with low relative humidity, intense sunshine, and wide variations in seasonal and daily temperatures. The average high temperature in January is 43 degree F. and the average low is 16 degree F. Highest temperatures occur in July with an average high of 88 degree F. and average minimum

temperatures of 59 degree F. Precipitation generally ranges from 12 to 16 inches annually, with 80 percent occurring between April and September. May is the wettest month and averages 2.5 inches. January is the driest month with an average of 0.5 inches.

Winds follow a daily pattern of flowing from the south at night and from the north during the day. Wind speeds at the Refuge average 8.7 miles per hour. Strong winds are common throughout the year, but March and April are the windiest months with a greatest potential for dust storms (Woodward Clyde 1992).

The Denver Metropolitan area experiences chronic carbon monoxide, ozone, and particulate matter air pollution as well as visibility problems. Major sources of pollutants are thought to come from motor vehicles, industry, wood burning and agricultural operations. Climatic and topographic conditions also contribute to air quality problems in the region. Denver's high elevation and abundance of cloud free days are conducive to production of ozone. Temperature inversions prevent atmospheric mixing and results in the accumulation of pollutants. Stable atmospheric conditions that are favorable for accumulation of pollutants occur throughout the year, but primarily in the winter. The Refuge is located in a non-attainment area for ozone, carbon monoxide and PM-10 particulates. Non-attainment indicates that the state standards for pollutants are not being met.

Air quality on the Refuge has been monitored since 1988 to determine ambient air quality levels and potential air pollution from cleanup activities (Woodward Clyde 1992). Monitoring of criteria pollutants—sulfur dioxide, nitrogen dioxide, carbon monoxide and ozone—indicates air quality at the Refuge is generally better than most Denver area sites. Periods of increased air pollutants at the Refuge are generally attributable to Denver metropolitan sources. There are two primary sources of total suspended particles (fine dust particles): particulates from the Denver metro area and remedial cleanup actions that generate dust. Particulate levels on the northern and eastern boundaries of the Refuge are well below Denver's and similar to rural conditions.

Air quality monitoring for metals, organic compounds and pesticides also has been conducted at the Refuge. Maximum metal concentrations typically occur during windy periods when particulate concentrations are high. Remediation activities are believed to contribute to metal concentrations. The presence of organic compounds at the Refuge appears to be related mostly to off-site sources, although remediation activities also may be a source. The primary source of pesticides is believed to be agricultural sources north of the Refuge, although cleanup activities also appear to have contributed to pesticide concentrations.

3.1.2 Geology and Soils

AFFECTED ENVIRONMENT)

The Refuge is located in the Denver Basin, which is a north-south fold in the regional geology that extends along the Front Range from Cheyenne, Wyoming to Colorado Springs, Colorado. Surface geologic deposits consist primarily of unconsolidated river sediments (alluvium) deposited by the South Platte River system and covered partially

by wind blown (eolian) sediments. The uppermost bedrock layer is called the Denver formation. This layer was originally 900 feet thick, but has eroded completely at nearby South Platte River areas, and is 500 feet thick at the southeast corner of the Refuge (Morrison-Knudsen 1988). The Denver formation is composed of stratified layers of clay, sandstone, shale, siltstone and coal. Below the Denver formation are numerous sedimentary geologic strata such as sandstones and shales. The Pierre shale formation is found at depths of 1,200 to 1,700 feet below the surface. This formation is about 6,200 feet thick,

Surface topography resulted from river and stream erosion associated with the South Platte River and its tributaries. The land shape varies from almost level to gently rolling with slopes typically less than 3 percent and terrace escarpments with slopes up to 10 percent. Elevation ranges from 5,138 feet along the northwest boundary to 5,250 feet at the southeastern boundary.

Soils developed from wind and water deposited material. Soils formed from water transported material are derived from shales, sandstone and granite. These soils are generally of clay to loam texture, although cobbly material occurs on hills in the northern portion of the Refuge (Walsh 1991). Soils developed in wind deposited material are typically sandy in texture. Throughout the Refuge, soils formed under grassland vegetation are typically dark colored with high organic matter content.

3.1.3 Water Resources

AFFECTED ENVIRONMENT

The Refuge is within several drainage basins that are tributary to the South Platte River, which is located less than two miles northwest of the Refuge. These basins include Irondale Gulch, First Creek, Second Creek, and several small areas that originally drained directly into the South Platte River. Due to human alterations, some of these areas now are tributary to either Irondale Gulch or First Creek. The Irondale Gulch and First Creek basins cover more than 91 percent of the total Refuge area.

At the Refuge, water flows primarily through a network of ditches and lakes. Flows within the drainage basins of the Refuge have been greatly modified by the construction of a number of diversions (laterals) and drainage channels (interceptors). Two of the more distinct drainage features, the Sand Creek lateral and the Upper Derby Lake overflow, can transport water from Irondale Gulch to the adjacent First Creek basin. Surface water originates from direct precipitation, runoff, inflow from drainage basins to the south and southeast, and ground water. All surface flows are intermittent, with streamflow occurring as a result of runoff, released or diverted flow or direct precipitation. Localized flooding occurs from thunderstorms that produce high intensity rainfall. For drainages without diversions and inflows from controlled releases, highest monthly flows occur in late spring to early summer and lowest flows occur in winter. Daily and monthly streamflows vary widely. A large proportion of surface flow onto the Refuge is lost due to ground water seepage, evaporation and vegetation transpiration.

The Irondale Gulch drainage basin encompasses the largest area of the watersheds on the Refuge. The majority of the basin is upgradient of the Refuge and contains industrial and residential development. Within the Refuge, the drainage basin contains four lakes (Upper and Lower Derby, Ladora and Mary.) Surface and ground water flows are connected at the Refuge. Within the First Creek drainage, surface water typically discharges to ground water at the south boundary, while at the north boundary and beyond, ground water discharges to First Creek. In general, ground water discharges to the lakes at their east to southeast sides and is recharged by the lakes to the north and northwest sides.

3.2 Biological Environment

3.2.1 Vegetation

AFFECTED ENVIRONMENT

The Repository occurs within the Refuge administration area located in section 35 just northeast of the Administration building #111. Most of the vegetation on the Refuge has been altered by human activities. Agricultural practices, industrial activities, cleanup operations and current wildlife management operations all have played a role in creating the existing composition of Refuge vegetation. There are, however, small areas of remnant native vegetation.

Weedy Forbs

The weedy forb type is the most common vegetation type on the northern two-thirds of the Refuge. The Weedy forb vegetation type was established following land disturbing activities, and may be perpetuated by prairie dogs that selectively graze perennial grasses (Morrison-Knudsen 1989). This vegetation type is dominated by annual and biennial forbs and is found on 16 percent of the Refuge. Common species include cheatgrass, summer cypress (kochia), field bindweed prickly lettuce, and tansy mustard. Areas mapped as weedy forb include a few native forbs and grasses such as scarlet globemallow, sunflower and re three-awn. There are very few woody or succulent plants found in this vegetation type.

Cheatgrass and Weedy Forb

This is the most extensive vegetation type, with about 20 percent of the Refuge supporting a mixture of cheatgrass and weedy forbs. Cheatgrass represents about two-thirds of the plant cover in this type. Principal weedy forbs include field bindweed, musk thistle, and prickly lettuce. Cheatgrass has become established throughout the Refuge.

Cheatgrass/Perennial Grass

This type represents a mixture of annual and perennial grasses and occurred on 10 percent of the Refuge by 1989. Cheatgrass was the dominant vegetation cover (58 percent), followed by perennial grasses (28 percent). Common native perennial grasses included sand dropseed, re three-awn and needle-and-thread grass. This type represents areas where native grasses have not been completely replaced by weedy

species. These areas may be in successional transition to native perennial grasses (Morrison-Knudsen 1989).

Crested Wheatgrass

Crested wheatgrass is not considered a weedy species, but it is an introduced species imported from Eurasia for erosion control. This species was planted in various locations on the Refuge throughout the years to reclaim disturbed areas. Currently, crested wheatgrass covers 19 percent of the Refuge. This species often occurs in relatively pure stands, but other species found in this unit include cheatgrass, sand dropseed and field bindweed. Yucca and prickly pear cactus also occur to a limited extent in this type. Stands of crested wheatgrass typically are replaced by native perennial grasses over time (Morrison-Knudsen 1989).

Shrubland and Succulents

Several shrub or succulent dominated communities are found on the Refuge. These communities occur primarily in association with various grassland types. Shrubland and succulents represent about 3 percent of the vegetation types on the Refuge.

Sand Sagebrush

Sand sagebrush occurs on sandy upland sites in the southern portion of the Refuge. Needle-and-thread grass and prairie sandreed are the most common native grasses in this type, while cheatgrass is the most abundant weedy grass. Areas of sand sagebrush possibly escaped plowing due to the density of brush or the unsuitability of the soils for farming.

Rubber Rabbitbrush

Rabbitbrush occurs on scattered upland hills in the eastern and southern parts of the Refuge. Only about 0.3 percent of the Refuge is covered in this vegetation type. Associated herbaceous vegetation is primarily cheatgrass and several perennial grass species, including sand dropseed and re three-awn. It is likely these areas were established as a result of overgrazing.

Yucca Grassland

Yuccas do not occur as a community by themselves, but in association with mixed grassland vegetation. This type is found in the northwestern and south-central areas of the Refuge. Common associated vegetation includes cheatgrass, needle-and-thread grass, re three-awn, sand dropseed and blue grama. Yuccas are most common on sandy shallow soils along low ridges.

Locust Thickets

New Mexico locust thickets are found on about 0.5 percent of the Refuge and are most common in the southern portion. Locusts form dense thickets with 88 percent cover and an understory of cheatgrass. Locust stands probably were planted as windbreaks or for game cover.

Wetland, Riparian and Riverine Plant Communities

Riparian plant communities occur on approximately 5 percent of the Refuge. The vegetation communities associated with this type occur along streams and bottomland areas where moister conditions provide habitat capable of sustaining varied plant types.

Cottonwood-Willows

Plains cottonwood and peachleaf willow are the principal tree species occurring along drainages, canals and reservoirs. This community was found on the Refuge prior to settlement, but has expanded due to additional water features. This vegetation type is most developed along the First Creek drainage. Understory species are currently dominated by smooth brome, with a subdominant presence of cheatgrass, slender wheatgrass, Canada wild rye and Kentucky bluegrass.

Bottomland Meadow

Bottomland meadows are found in moist soils near drainages, reservoirs and canals. Species composition varies widely between locations, with weedy forbs the most common. Representative species include barnyard grass, lady's thumb, horseweed, prickly lettuce, and showy milkweed. Canada thistle, a noxious weed, is present at nearly all sites. Disturbance to these areas eliminated native grasslands, which likely were dominated by big bluestem, and slender and western wheatgrass.

Cattail Marsh

Cattail areas typically occur in almost pure stands in the wettest locations along streams, ditches and reservoirs. An increase in water features on the Refuge likely has increased the presence of this vegetation type.

Upland Trees and Shrubs

There are a variety of ornamental trees and shrubs scattered throughout the Refuge. The majority of these are found in the southern half, planted near homesteads and as windbreaks. Common species include Siberian and American elm, Russian olive, Rocky Mountain juniper, green ash and various fruit trees.

3.2.2 Wildlife and Fisheries

AFFECTED ENVIROMENT

The Refuge supports a variety of wildlife and fish species common to the pre-settlement plains ecosystem, as well several introduced or exotic species that were not historically present. There are also several species that are native to the plains ecosystem that no longer occur on the Refuge. Several of these species are being considered for reintroduction.

Following cleanup, the Refuge will be the largest contiguous block of undeveloped land within the Denver metropolitan area. The Refuge currently supports a significant concentration of the prairie dogs, bald eagles, burrowing owls and other wintering raptors (haws and eagles) along the Front Range. In addition, the Refuge provides a significant source of habitat for a substantial population of deer, migratory birds and small mammals. The importance of the Refuge to the region, particularly for migratory bird species, will continue to increase with development along the Front Range in the

Denver metropolitan area. The Refuge's large, 27-square miles area supports species and communities associated with the once expansive plains grasslands that have been long in decline due to agricultural and urban development. Many of the remaining areas of native grassland or undeveloped land have been fragmented by cropland, roads, housing and commercial development. The diversity of habitat found on the Refuge provides a unique setting for maintaining and establishing wildlife native to the region.

Before settlement, the plains ecosystem provided habitat for a variety of species including bison, pronghorn antelope, prairie dogs, coyotes, foxes, badgers and rabbits. It also provided habitat for a variety of small mammals, birds, reptiles, and amphibians. Conversion of the native grasslands to agricultural lands and subsequent industrial development followed by invasion of non-native plant species has resulted in a substantial shift in the composition of wildlife species, numbers and distribution.

Mammals

Deer are the most noticeable wildlife found on the Refuge. Two deer species are present—mule deer and white-tailed deer. Mule deer are the most common with a current population estimated of 530 animals. These deer are found throughout the Refuge. Mule deer populations have increased rapidly from a density of 8 per square mile in 1986 and 1987 to 20 per square mile in 1995. The current density is higher than typical for most prairie habitats, and is due primarily to Refuge fencing. White-tailed deer are found typically in riparian and wooded areas with greater cover, such as along First Creek and the south lakes area. Their current population is estimated at 200 (Morrison-Knudsen 1989).

There are several carnivorous mammals found on the Refuge. Coyotes are the most abundant and are found in all habitats. The number of coyotes is relatively high compared to other prairie areas, due to the large prey base provided by prairie dogs, other small mammals and deer. Red foxes are rare and gray fox and swift fox numbers are thought to be low or non-existent. Badgers are found on the Refuge, but raccoons and striped skunks are uncommon.

Black-tailed prairie dogs have historically established colonies as large as 4,700 acres on the Refuge. Currently, black-tailed prairie dogs have established colonies on approximately 100 acres. The largest colonies are found in the northeast and northwest areas of the Refuge. Prairie dogs prefer native shortgrass prairie habitat, but on the Refuge they commonly use the weedy forb vegetation type. Prairie dogs serve as an important prey base for a number of predators including bald eagles, ferruginous hawks, other raptors and coyotes. Their populations fluctuate greatly due to outbreaks of sylvatic plague.

Other mammals also are found on the Refuge. Desert cottontail rabbits, the most abundant rabbits, usually are found in association with prairie dogs. Eastern cottontails generally are found in riparian areas or thickets. Black-tailed jack rabbits are common in the southwest portion of the Refuge (Jones et al. 1994). Plains pocket gophers are found throughout most of the Refuge, although they typically avoid prairie dog towns

and areas of crested wheatgrass. The thirteen-lined ground squirrel is the most common squirrel. The spotted ground squirrel occurs where sandy soils exist in the western portion of the Refuge. A few fox squirrels inhabit woody riparian areas and upland tree groves. Muskrats are found at all lakes and ponds. Also found on the Refuge are deer mice, western harvest mice, prairie vole, silky pocket mice and plains pocket mice. The northern grasshopper mouse prefers native grasslands and yucca stands. Ord's kangaroo rat can be found in yucca dominated plant communities. Prairie and meadow voles favor areas with developed grass and forb cover, and are an important part of the prey base.

Birds

Birds found on the Refuge include year-round residents, nesting species and seasonal migrants. The most conspicuous of the grassland songbirds are the horned lark, western meadow lark, grasshopper sparrow and lark bunting. Horned larks prefer areas of sparse vegetation such as prairie dog towns, while the western meadow lark is found in taller herbaceous vegetation. Numerous sparrows, such as the vesper sparrow, Cassin's sparrow, Brewer's sparrow and lark sparrow, nest in grassland habitat. Grassland migrant species include various swifts, swallows and sparrows.

Deciduous trees near buildings or old homesteads provide nest sites for northern flickers, western kingbirds, black-billed magpies, American robins, common grackles, starlings, northern orioles, yellow warblers and a variety of other species. Riparian woodlands that contain denser and more varied plant communities also support a similar composition of tree nesting birds. Riparian areas also attract spring migrants such as re-headed woodpeckers, dusky and willow flycatchers, and various thrushes, sparrows and warblers. Cattail marshes bordering lakes, ponds, ditches and streams provide valuable nesting habitat for redwing blackbirds and common yellow-throats. Important migratory bird nesting habitat is concentrated along First Creek, area lakes, and in areas of wooded and shrubby vegetation.

Lakes, ponds and streams on the Refuge provide a variety of habitat for waterfowl and shorebirds. The Refuge supports more waterbirds than historically occurred, since most of the lakes, ponds and associated wetlands were created following settlement. Canada geese are probably the most common waterbird found on the lakes. A variety of ducks are found on Refuge lakes during the spring and fall including mallards, northern pintails, gadwalls, American wigeons, teal and many other species. Diving ducks that frequent lakes include canvasbacks, red heads, common goldeneyes and buffleheads. Lake Ladora currently supports the highest waterfowl use.

Great blue herons are most frequently found near aquatic sites. Black-crowned night herons are also active around lakes and wetland sites. There are a number of shorebirds common a lake shores during the spring and fall including killdeer, American avocet, willet, greater yellowlegs, sandpiper and numerous others. Herring and ring-billed gulls are the most common gulls found on the Refuge. White pelicans have been observed on all Refuge lakes.

There are 16 species of raptors known to use the Refuge. Ferruginous hawks are winter migrants that hunt in the open grassland habitats on the Refuge. Coopers and sharp-shinned hawks are seasonal migrants that favor wooded areas, but no nests have been found to date. The Refuge also provides suitable habitat for American kestrels and prairie falcons that feed on small mammals and insects. Red-tailed hawks, Swainson's hawks and northern harriers are seasonally common. Rough-legged hawks are found in open grassland habitat during the winter months.

There are five owl species found on the Refuge, the most numerous of which is the burrowing owl. Burrowing owls utilize abandoned prairie dog burrows for nesting. Great horned owls and long-eared owls also nest on the Refuge. Although uncommon, eastern screech owls use wooded habitat, and short-eared owls have been observed during migration.

Bald eagles winter on the Refuge primarily from November to March. Bald eagles roost in the large cottonwood trees on First Creek and feed primarily on prairie dogs and jack rabbits. The Service has established a bald eagle management area to restrict access to important eagle habitat during winter use periods.

Reptiles and Amphibians

Bullsnakes are the most common reptiles found on the Refuge. Relatively uncommon, the western hognose is found in sandy areas. Garter snakes can be found near water. Prairie rattlesnakes are present and very common. Only a few lizard species have been observed including lesser earless lizard, short-horned lizard and many-lined skink.

The most abundant amphibian is the northern chorus frog, which breeds in cattail marshes. The northern leopard frog and bullfrog occur primarily at Refuge lakes. Toads known to exist in the vicinity of water sources include the Great Plains toad, Plains spadefoot toad and Woodhouse's toad. Tiger salamanders are found in most wetland areas across the Refuge.

Fish

Ladora, Mary and Lower Derby lakes provide a source of water that supports viable fish populations. Bluegill, channel catfish, northern pike and largemouth bass are the principal species. The Service currently manages these lakes for a catch and release fishery program. First Creek and other small ponds contain small fish populations such as fathead minnows. Mosquito fish are stocked annually in wetlands in the southern area of the Refuge to assist in control of mosquito larvae.

3.2.3 Threatened and Endangered Species

The Refuge provides habitat for several federally listed threatened, endangered and candidate plant and animal species. Candidate species are those for which insufficient information is currently available for listing as threatened or endangered. Some species

inhabit the Refuge on a regular or seasonal basis while others are migrants that are infrequently sighted on the Refuge.

Bald Eagle

The bald eagle was recently down listed from endangered to threatened status in the majority of the U.S., including Colorado, due to nationwide recovery efforts. Bald eagles annually use the cottonwood trees along First Creek between October and April as a winter communal roost. Bald eagles at the Refuge prey on prairie dogs, other small mammals and fish. A Bald Eagle Management Area was also established on the Refuge to protect high eagle use areas during critical times of the year.

The Bald and Golden eagle Protection Act prohibits the take, transport, possession sale, barter, or offer for sale or barter, import/export of eagles, parts nests and eggs without a permit. Bald eagles reach adult size when they are about 12 weeks old, but don't attain their signature white head and tail feathers until they are 4-5 years old. During normal flight, bald eagles can average 30 to 40 miles per hour. When diving, they can reach speeds up to 100 miles per hour.

Peregrine Falcon

The American peregrine falcon is listed as an endangered species throughout its range. Pesticide use is thought to have led to the decline of this species. Peregrines typically nest on ledges close to water near readily available sources of avian prey. The closest suitable nesting habitat for peregrines near the Refuge is located along the Front Range foothills, 25 miles to the west. Peregrines have also been introduced in the downtown Denver area in efforts to establish an urban population. Peregrines have been observed at the Refuge on several occasions.

Preble's meadow jumping mouse

The Preble's meadow jumping mouse prefers dense willow and grass riparian vegetation. Although this type of habitat is present on the Refuge, no specimens have been recorded.

3.2.4 Candidate Species

Ferruginous hawk

The ferruginous hawk is native to open grassland habitat. The conversion of grasslands to agriculture, loss of nesting sites, and reduction in prey base has led to its decline. A large number of ferruginous hawks are attracted to the Refuge each winter by the abundance of prairie dogs and rabbits.

Baird's sparrow

Baird's sparrow is a migrant visitor to the native grassland prairie of the Refuge. Its decline is attributed to the loss of open grassland prairie habitat.

Black tern

The Black tern typically nests along lake shores and marshes and feeds on small fish. The Refuge contains suitable habitat for the black tern, but it has only been observed as an uncommon migrant.

Mountain plover

The mountain plover prefers dry upland plains and prairies. It feeds primarily on grasshoppers. The extensive prairie dog towns at the Refuge provide excellent habitat for the plover. Although the mountain plover has been observed on the Refuge, no nesting activity has been documented.

White-faced ibis

The white-faced ibis, a long-legged, wading bird, is found associated with lakes, rivers and wetlands. The Refuge does not provide optimal nesting or foraging habitat for the ibis, but it is recorded as a casual visitor.

Colorado butterfly weed

The Colorado butterfly weed prefers moist prairie meadows. The Refuge contains suitable habitat, but there have been no documented occurrences of the butterfly weed.

3.3 Cultural Resources

Rocky Mountain Arsenal contains several hundred cultural resources in the form of historic building and archaeological sites and isolated finds. Many of these cultural resources are eligible for inclusion in the National Register of Historic Places (NRHP), and require management under the provisions of the National Historic Preservation Act (NHPA).

3.4 Recreation

Many types of recreational opportunities exist at the Refuge. Interpretive and environmental education areas, presentations and special events allow the public to learn more about the Refuge, its wildlife, natural resources, history and cleanup. Eagle watching, bird watching and wildlife tours provide the public with a better understanding of wildlife. Considering current visitation and participation in public programs, many programs seem to be gaining popularity, especially participation in environmental education, interpretive programs and nature walks. Participation in fishing, presentations, eagle watching and special events increased markedly. Refuge populations of bald eagles, waterfowl, deer, and other wildlife species enhance public opportunities for wildlife observation, environmental education and interpretation.

3.5 Social and Economic Conditions

The character and population of the community surrounding the Refuge would not change under any of the alternatives. No residential, commercial or industrial development occur on the Refuge. Effects to community services and infrastructure would be insignificant. The establishment of the Refuge and cleanup of the Arsenal alters the public's perception of the northern metro area communities, including Commerce City. The public comes to associate this area with natural resources, wildlife and outdoor recreation.

Chapter 4. Environmental Consequences

4.1 **Alternative A:** *(No Action) Off-site cremation at no cost*

4.1.1 **Climate and Air Quality**

Currently, eagle refuse is transported by open bed truck to an off site crematorium at no cost. During transportation, especially during high temperature days, astringent odors of decomposition are emitted as the vehicle exits and transits through the surrounding public to the destination. In addition, a standard vehicle emission due to off-site transportation provides added risk to health and human safety. Overall, consequences to air quality are relatively minuscule.

4.1.2 **Geology and Soils**

This alternative poses no threat to the surrounding environment because the action takes place off site.

4.1.3 **Water Resources**

This alternative poses no threat to the surrounding environment because the action takes place off site.

4.1.4 **Biological Environment**

Vegetation This alternative poses no threat to the surrounding vegetation because the action takes place off site

Wildlife and Fisheries This alternative poses no threat to the surrounding wildlife resources because the action takes place off site

Threatened and Endangered Species This alternative poses no threat to surrounding threatened and endangered species because the action takes place off site

Candidate Species This alternative poses no threat to surrounding candidate species because the action takes place off site

4.1.5 **Cultural Resources** (NRHP) finds no archaeological, historical or architectural resources in the near vicinity of the National Eagle Repository. Therefore, this alternative poses no threat to surrounding cultural resources because the action takes place off site

4.1.6 **Recreation** This alternative poses no threat to surrounding recreational activities because the action takes place off site

4.1.7 **Social and Economic Conditions** This alternative poses no threat to the surrounding social and economic conditions because it is a no cost alternative and the action takes place off site

4.1.8 **Environmental Justice** This alternative poses no threat to the surrounding minority populations because the action takes place off site and is a no cost alternative.

4.2 Alternative B: (Action) *On-site cremation (Service's preferred)*

4.2.1 Climate and Air Quality

This option is proposed with the use of a cremation unit designed to meet requirements/standards of Colorado Regulation No. 6 (units less than 200 lbs/hr.) for pathological waste (human or animal remains consisting of carcasses, tissues, organs or body parts.) The proposed unit is smokeless, odorless and has a 400 lbs. capacity. Unobtrusive operation is assured through its unique series of secondary chambers and Electronic Exhaust Gas Scanner which continuously monitors and controls clarity of cremation exhaust gases. On the average, the Repository accumulates 15-20 bags per month @ 25 lbs. per bag. Therefore, we are proposing to burn no more than 1-2 times per month. The regulated level of particulate matter is a maximum of 0.08 grains per dry standard cubic foot(gr/dscf) corrected to 7% O₂ including condensable particulates. The proposed unit emissions would not exceed 0.017 gr/dscf. The regulated level of carbon monoxide is not to exceed 100 parts per million dry volume (ppmdv). The proposed unit, levels would be 2.1 ppmdv. Visible emissions regulated level, 10% opacity. The proposed unit would be less than 0.5% emission. These volumes were reviewed by the Rocky Mountain Arsenal Air Monitoring Team and are expected to have a negligible effect on current/future air monitoring activities and poses no threat to the environment or overall air quality.

4.2.2 Geology and Soils

The proposed location of the crematory (16'x20') is in the parking lot northeast of the Repository. This lot is made up of road base, therefore, excavation would be minimal to accommodate running electrical and gas approximately 100 ft. To accommodate transportation of refuse to the crematory, the concrete sidewalk may need to be extended no more than 10 ft. No significant impacts to geology and soil resources are expected for the Preferred Alternative.

4.2.3 Water Resources

This would require a small amount of excavation to build a 16'x20' building to house a gas fired crematory with dimensions consisting of 9'Lx5'10"Wx10'H. Running electrical and gas lines no more than 100 ft. To accommodate transportation of waste to the crematory, the concrete sidewalk may need to be extended no more than 10 ft. This alternative requires no ground water, nor will it require any liquid disposal having a negligible effect on the surrounding ground water resources.

4.2.4 Biological Environment

Vegetation This alternative requires a small amount of excavation including running electrical and gas lines a relatively short distance, less than 100 ft having a negligible effect on the surrounding vegetation.

Wildlife and Fisheries This alternative could require some trapping and relocation of black-tailed prairie dogs including removal of less than 10 burrows. The Refuge currently has a live trap and relocation program in place to control distribution and minimize colonization. Also, this species has access to

surrounding alternate sites. The impact of this option to these biological wildlife resources would be very minimal.

Threatened and Endangered Species This alternative poses no threat to threatened or endangered species or their habitat as there is known occupancy in the immediate vicinity of the proposed crematory.

Candidate Species The proposed area for this alternative would not impact any candidate species or their habitat as there is no known occupancy in the immediate vicinity of the crematory.

4.2.5 **Cultural Resources** The proposed crematory will not have an impact on any cultural resources as there are none within the proposed construction site.

4.2.6 **Recreation** The proposed unit will be housed within a brick building. Also, the proposed site location is not within the areas deleted from clean up activities, therefore, visitor services do not include this area for typical outreach activities and should not impact recreational activities.

4.2.7 **Social and Economic Conditions** The previous method was conducted at no cost and did not impact any social or economic conditions. This alternative will also be no outside cost thereby having no impact to social and economic conditions.

4.2.8 **Environmental Justice** This alternative poses no threat to the surrounding minority populations because it is at no outside cost and takes place within Federal property.

4.3 Alternative C (Action): Off-site cremation at a cost

4.3.1 Climate and Air Quality

Currently, eagle refuse is transported by open bed truck to an off site crematorium at no cost. During transportation, especially during high temperature days, astringent odors of decomposition are emitted as the vehicle exits and transits through the surrounding public to the destination. In addition, a standard vehicle emission due to off-site transportation provides added risk to health and human safety. Overall, consequences to air quality are relatively minuscule.

4.3.2 Geology and Soils

This alternative poses no threat to the surrounding environment because the action takes place off site.

4.3.3 Water Resources

This alternative poses no threat to the surrounding environment because the action takes place off site.

4.3.4 Biological Environment

Vegetation This alternative poses no threat to the surrounding vegetation because the action takes place off site

Wildlife and Fisheries This alternative poses no threat to the surrounding wildlife resources because the action takes place off site

Threatened and Endangered Species This alternative poses no threat to surrounding threatened and endangered species because the action takes place off site

Candidate Species This alternative poses no threat to surrounding candidate species because the action takes place off site

4.3.5 Cultural Resources

(NRHP) finds no archaeological, historical or architectural resources in the near vicinity of the National Eagle Repository Therefore, this alternative poses no threat to surrounding cultural resources because the action takes place off site

4.3.6 **Recreation** This alternative poses no threat to surrounding recreational activities because the action takes place off site

4.3.7 **Social and Economic Conditions** This alternative poses no threat to the surrounding social and economic conditions because it is a no cost alternative and the action takes place off site

4.3.8 **Environmental Justice** This alternative poses no threat to the surrounding minority populations because the action takes place off site.

4.4 Summary of Impacts by Alternative

Impact Topics	Alternative A (No Action) Off-site cremation at no cost.	Alternative B Action, (Preferred) On-site cremation	Alternative C (Action), Off-site cremation at a cost.
Physical Environment	Poses no threat as they occur off site.	Visible emissions less than 0.5%. Insignificant impact.	Poses no threat as they occur off site.
Biological Environment	Poses no threat as they occur off site.	Some excavation and wildlife relocation required with impacts minimal.	Poses no threat as they occur off site.
Cultural Resources	Poses no threat as they occur off site.	No cultural resources found in the near vicinity of the Repository	Poses no threat as they occur off site.
Recreation	Poses no threat as they occur off site.	Negative impact due to location outside visitor access.	Poses no threat as they occur off site.
Social or Economical Issues	Poses no threat as they occur off site.	Negative impact due to location.	Poses no threat as they occur off site.
Cost	Temporary no cost for cremation. Transportation cost \$170.00 per month.	Initial Construction cost \$86,000.00. Monthly cost \$32.00.	Transportation and cremation cost, \$535.00 per month.

Chapter 5 List of Agencies, Organizations and Persons Contacted

Dean Rundle, Refuge Manager, USFWS, Rocky Mountain Arsenal NWR

Bruno Caciagli, Washington Group, Rocky Mountain Arsenal NWR

Stephen Smith, USFWS, Rocky Mountain Arsenal NWR

Charlie Scharmann, DOD, U.S. Army, Rocky Mountain Arsenal NWR

Tom Jackson, USFWS, Rocky Mountain Arsenal NWR

Terry Clayton, Region 9, USFWS, Engineering, Washington, D.C.

Connie Young-Dubovsky, Region 6, USFWS, NEPA Coordinator

Craig Tessmer, Adams County Planning and Development Dept., Westminster, CO

Scott Klingensmith, RVO, Air Monitoring Group, Rocky Mountain Arsenal NWR

Tim Kilgannon, RVO, Air Monitoring Group, Rocky Mountain Arsenal NWR

Emi Saito, USGS, National Wildlife Health Center, Madison, WI

W. Robert Talbot, NEPA Instructor, Metro State College, Denver, CO

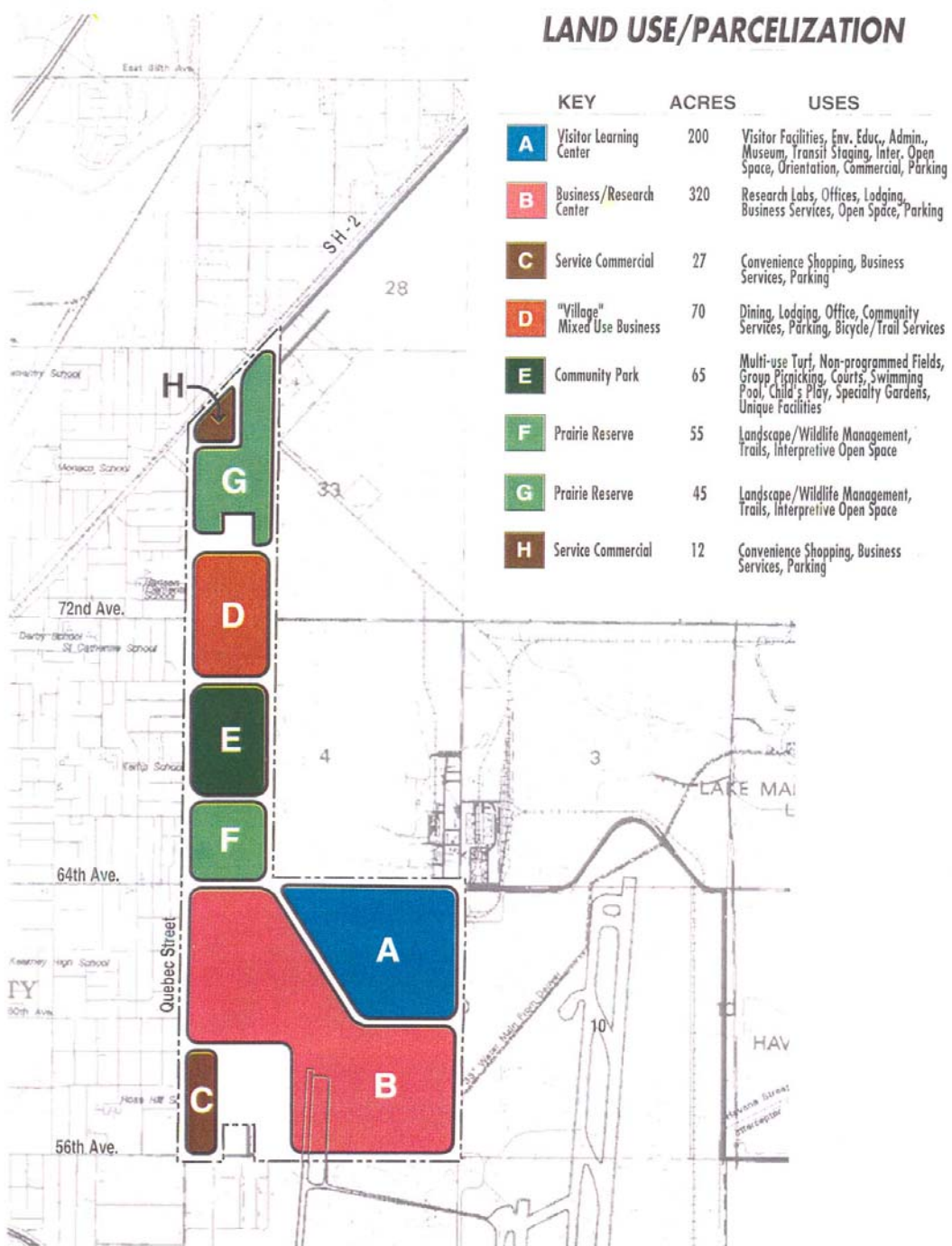
Crawford Cremation Systems, Orlando, FL

Therm Tec, Inc. Tualatin, OR

Consutech Systems, LLC, Mechanicsville, VA

Appendices

Maps



Consultants:
SHAPINS ASSOCIATES
RBC Associates
Carter Burgess

For:
CITY OF COMMERCE CITY

ROCKY MOUNTAIN ARSENAL
SURPLUS PROPERTY MASTER PLAN
COMMERCE CITY, COLORADO



PHYSICAL MAP #1

Figure 1
Rocky Mountain Arsenal Reference Site Map

Legend

- Roads
- - - Streams
- * Future Gateway to Commerce City and the Refuge



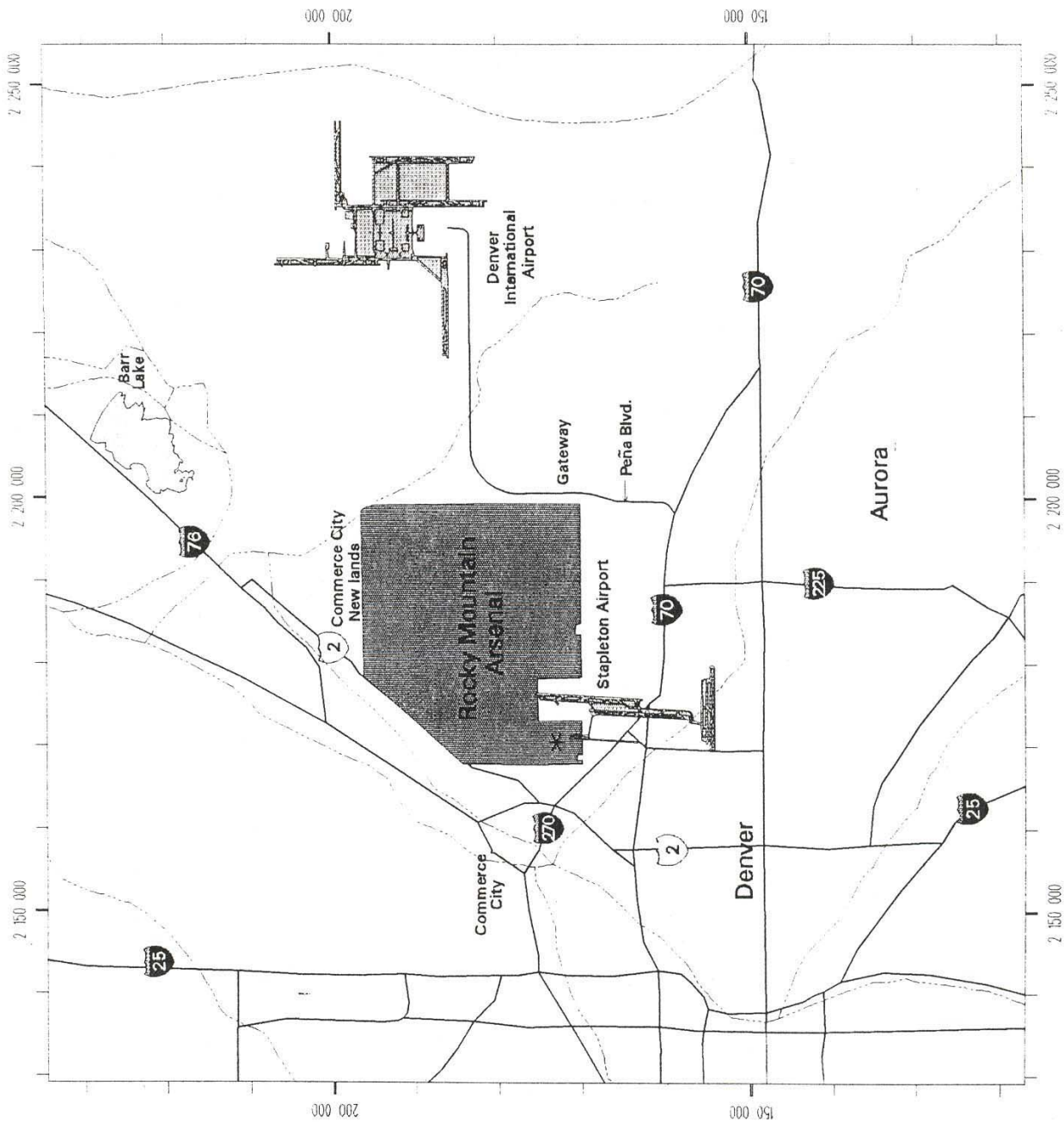
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0 9050 18100 Feet
State Plane Coordinate System, CO North Zone
NAD27/NGVD29 Datum

Source: U.S. Army BIMS, DP Associates.

PMRMA - GIS

Reference Site Map
DEPARTMENT OF
THE ARMY
ROCKY MOUNTAIN ARSENAL
DENVER, COLO.
Dp Associates, Inc.

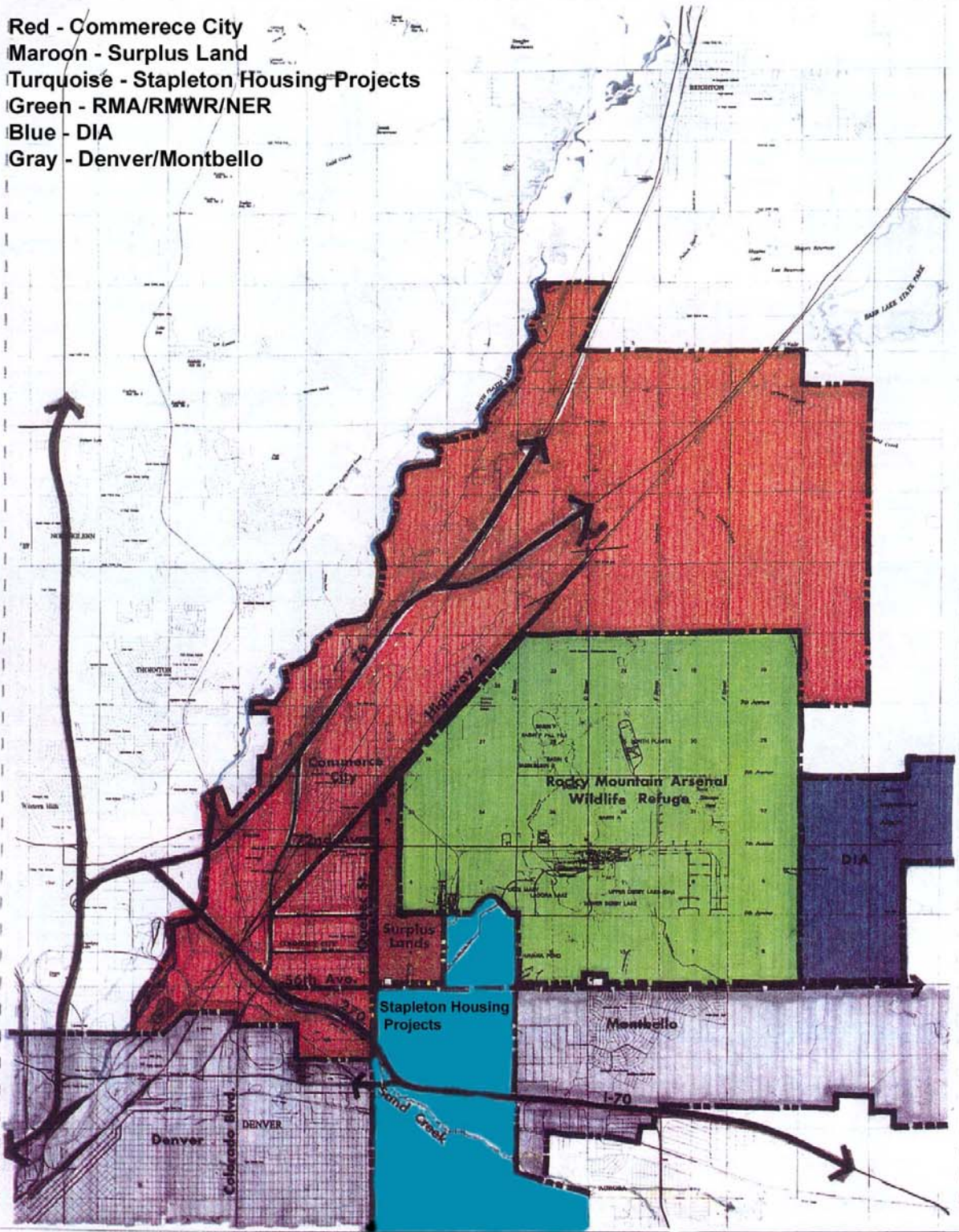
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URBAN CONTEXT

Physical Map # 2

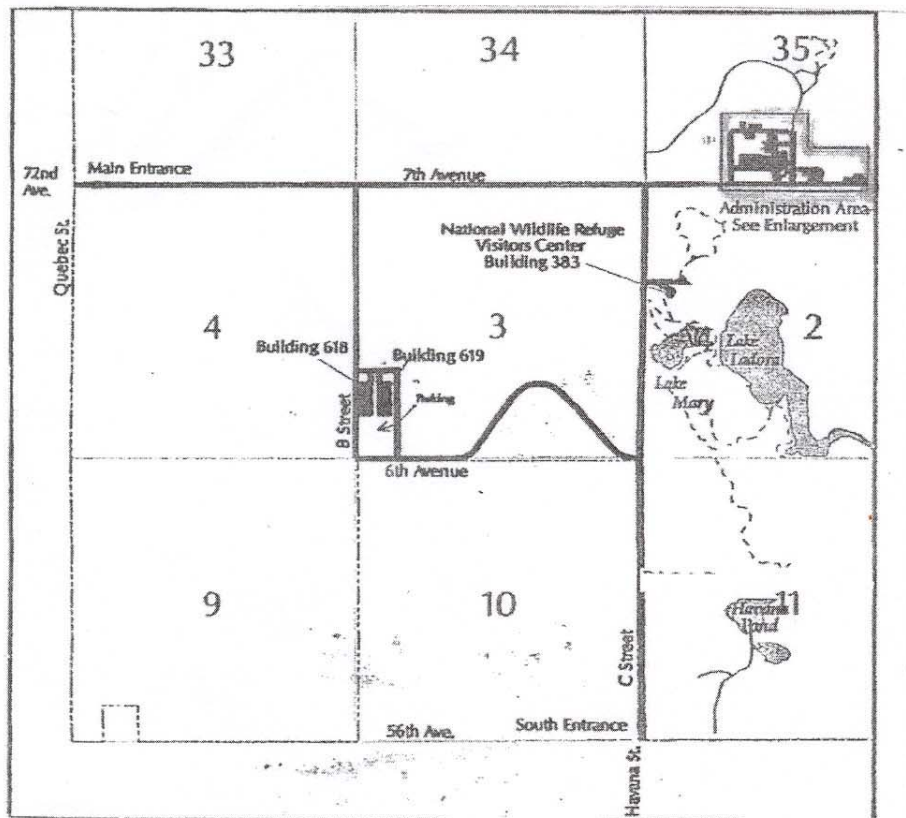
- Red - Commerce City
- Maroon - Surplus Land
- Turquoise - Stapleton Housing Projects
- Green - RMA/RMWR/NER
- Blue - DIA
- Gray - Denver/Montbello



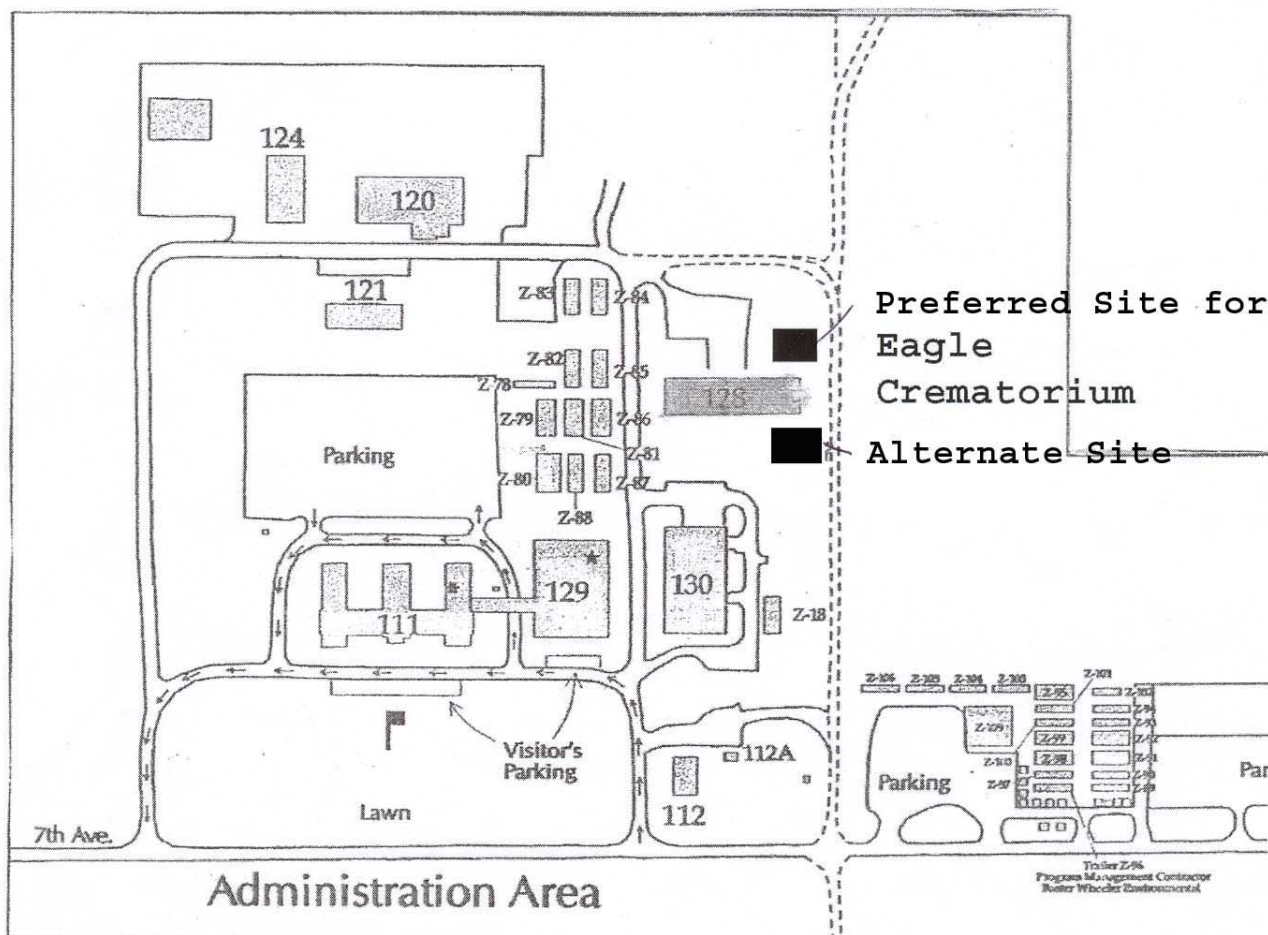
CHAPIN & ASSOCIATES
CITY OF COMMERCE CITY
Carter Plaggett

ROCKY MOUNTAIN ARSENAL
SURPLUS PROPERTY MASTER PLAN
COMMERCE CITY, COLORADO

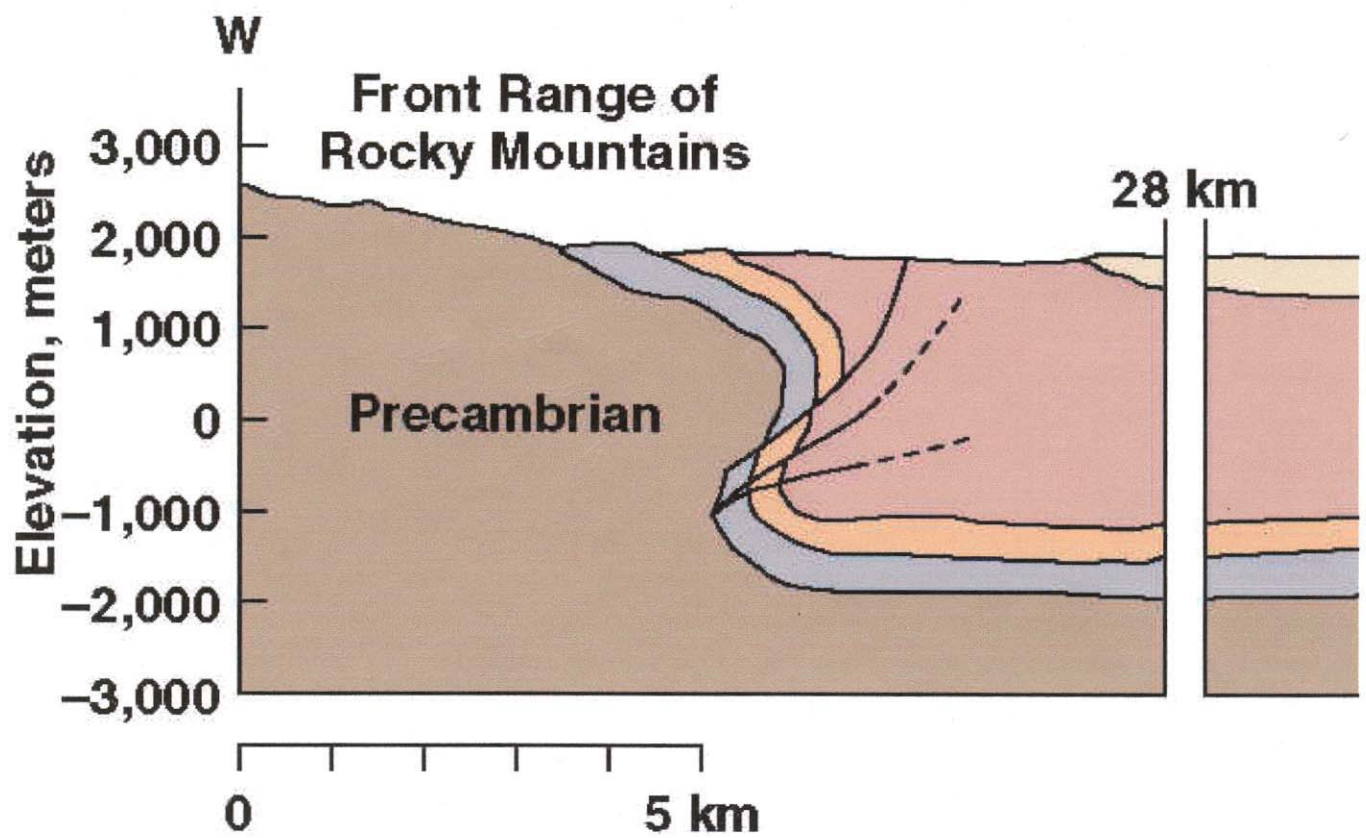




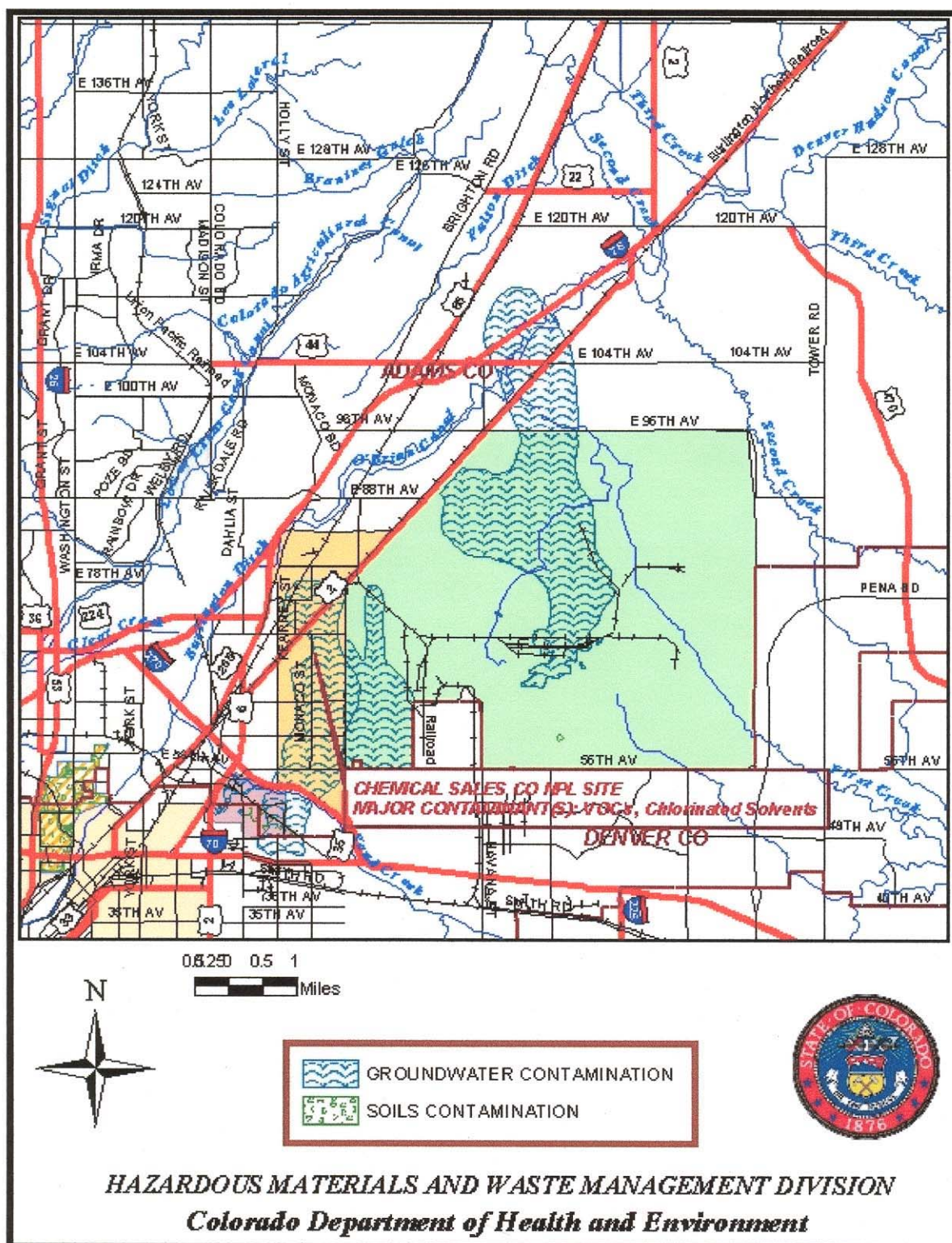
Physical Map #3
(Map Not Drawn
to scale, use
only as reference)



Physical Map # 4



Physical Map # 5



Photographs

Crematorium Site Location





NER Building



Crematorium Specifications

FACILITIES:

We are proposing a crematorium inside of a new enclosed structure located on the northeast side of the existing Repository Facility (building No. 128). The completion of this facility will enable the USFWS to properly manage and dispose of eagle carcass refuse and illegal wildlife parts and products. The proposed incinerator will be used to reduce this material to ash, acceptable to landfills.

The repository currently processes approximately 1500 eagle carcasses annually. The amount of waste material is estimated to be approximately 400 pounds per month. It is anticipated that the incinerator will be operated 2-3 times per month during normal business hours. The enclosure will be secured at all times with access only by authorized personnel.

UNIT SPECIFICATIONS

The crematorium will be capable of burning typical pathological waste including pathological animal remains, consisting of carcasses, organs and solid organic material (Type 4, pathological waste). The unit will consist of a solid hearth in the primary combustion chamber where partial burning and conversion of the combustible organic matter occurs, and a secondary combustion chamber that shall consume the combustible gases and entrained combustible particles. Shells of the incinerator shall be of gas-tight construction. The incinerator will be suitable for indoor installation and will be equipped with a manual charging system.

The incinerator will be a new commercial batch load unit designed for pathological waste. Unit will be similar to Crawford Model CB-400 (specifications are attached). The unit will have a maximum of 400 pound initial load capacity with a burn rate of 85 pounds per hour. The primary chamber will operate at 1400 degrees F. The secondary chamber will operate at 1800 degrees F and have a one second retention time. The operating conditions will be in strict accordance with EPA regulations and Colorado Regulation No. 6 for pathological waste with a capacity of 200 pounds per hour or less.

The unit will be capable of cremating 85 pounds per hour. This is approximately four to six, thirty gallon trash bags of eagle carcasses and parts per burn cycle.

Eagle carcasses are processed at the Repository which is a secured building, with limited public access. The waste eagle parts are stored in sturdy paper garbage bags and incinerated. Ash will be stored onsite within the incinerator building, in leak proof containers and then sent to the county landfill for final disposal. No marketable materials will come from the ash.

In the event that the incinerator is in-operable the waste stream will be kept in freezers located at the Repository until which time the unit becomes operational.

Emissions

For the chemical pollutants produced when burning animals the Emission factor chart reads in lbs per ton of burned material. Carbon Monoxide- 0.6lbs, Nitrates/Nitrites-11lbs, Sulfates/Sulfites-1.4lbs, Lead-0.073lbs.

NER is only planning to burn 400 lbs/month which is equal to about 2.4 tons per year making the yearly pollutants look like this. Carbon Monoxide - 1.44 lbs/year, Nitrates/Nitrites-26.4 lbs/year, Sulfates/Sulfites-3.36 lbs/year, Lead-0.18 lbs/year. These amounts are negligible.

